

Title (en)
METHOD FOR DRYING THIN FILMS IN AN ENERGY EFFICIENT MANNER

Title (de)
VERFAHREN ZUM ENERGIESPARENDEN TROCKNEN VON DÜNNFILMEN

Title (fr)
PROCÉDÉ POUR SÉCHER DES COUCHES MINCES D'UNE MANIÈRE ÉCOÉNERGÉTIQUE

Publication
EP 2695254 A4 20150325 (EN)

Application
EP 12768068 A 20120328

Priority
• US 201113082469 A 20110408
• US 2012030845 W 20120328

Abstract (en)
[origin: US2011248026A1] A method and apparatus for thermally processing material on a low-temperature substrate using pulsed light from a flash lamp is disclosed. Material is conveyed past the flash lamp. The pulses of light are formed by Pulse Width Modulation to tailor the shape of the pulses to generate a thermal gradient in the substrate that enables the material to be heated beyond the maximum working temperature of the substrate without damage. Its shaped pulse rate is synchronized to the conveyance speed of a conveyance system. By using the information from a feedback sensor, the thermal gradient is recalculated to alter the shape of the pulses in real time for optimizing subsequent curings in real time without powering down the curing apparatus. The combined pulse shaping and synchronization allow a temperature profile to be tailored in the sample that is uniformly cured in the conveyance direction.

IPC 8 full level
H01S 3/30 (2006.01); **B29C 35/10** (2006.01); **B29C 71/02** (2006.01); **F26B 3/28** (2006.01); **F26B 13/10** (2006.01); **H05B 41/34** (2006.01); **H05K 3/12** (2006.01)

CPC (source: EP KR US)
B29C 35/0805 (2013.01 - EP US); **B29C 35/10** (2013.01 - EP US); **B29C 71/02** (2013.01 - EP US); **F26B 3/28** (2013.01 - EP US); **F26B 3/347** (2013.01 - KR); **F26B 13/10** (2013.01 - EP US); **H01L 21/302** (2013.01 - KR); **H05B 1/0294** (2013.01 - US); **H05B 3/009** (2013.01 - US); **H05K 3/1283** (2013.01 - EP US); **B29C 2071/022** (2013.01 - EP US); **H05B 41/34** (2013.01 - EP US); **H05K 1/0386** (2013.01 - EP US); **H05K 3/125** (2013.01 - EP US); **H05K 2203/1545** (2013.01 - EP US)

Citation (search report)
• [X] US 2010007285 A1 20100114 - SCHRODER KURT A [US], et al
• [X] WO 2006015328 A2 20060209 - UT BATTELLE LLC [US], et al
• [X] US 2009181184 A1 20090716 - POPE DAVE S [US], et al
• [X] US 2010098874 A1 20100422 - SCHRODER KURT A [US]
• [A] US 5194723 A 19930316 - CATES MICHAEL C [US], et al
• [A] US 6660572 B2 20031209 - MIYASAKA MITSUTOSHI [JP]
• [A] US 7317870 B2 20080108 - TIMANS PAUL J [US], et al
• [A] US 5858819 A 19990112 - MIYASAKA MITSUTOSHI [JP]
• [A] US 2006216927 A1 20060928 - CORDINGLEY JAMES J [US], et al
• See references of WO 2012138516A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)
US 2011248026 A1 20111013; US 8907258 B2 20141209; CA 2832543 A1 20121011; CA 2832543 C 20170725; CN 103688427 A 20140326; CN 107584709 A 20180116; CN 107584709 B 20200403; EP 2695254 A1 20140212; EP 2695254 A4 20150325; EP 2695254 B1 20230607; JP 2014513263 A 20140529; JP 5936286 B2 20160622; KR 101852024 B1 20180425; KR 20140034184 A 20140319; US 10986698 B2 20210420; US 2015055943 A1 20150226; WO 2012138516 A1 20121011

DOCDB simple family (application)
US 201113082469 A 20110408; CA 2832543 A 20120328; CN 201280023304 A 20120328; CN 201710717275 A 20120328; EP 12768068 A 20120328; JP 2014503687 A 20120328; KR 20137029615 A 20120328; US 2012030845 W 20120328; US 201414540639 A 20141113